

# Re: infinity

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- *From:* Tony Orlow (aeo6) <aeo6@xxxxxxxxxxxx>
  - *Date:* Thu, 11 Aug 2005 12:58:25 -0400
- 

Jesse F. Hughes said:

> Tony Orlow (aeo6) <aeo6@xxxxxxxxxxxx> writes:

>

>> Jesse F. Hughes said:

>>> Let's change the problem slightly. Again, we have an infinite set of  
>>> ping pong balls, each ball labeled with a natural number. But instead  
>>> of the old procedure, let's put \*all\* of the balls into the vase at  
>>> 11:59 and remove the first one. At 11:59:45, we remove the second,  
>>> and so on.

>

>> This is the same question Virgil posted a half dozen times in a row.

>

> Yes it is, but that is coincidental.

>

>>>

>>> Tony: Is the vase empty or not at noon?

>> Yes.

>>>

>>> If empty, then when was the last ball removed?

>> Noon.

>>>

>>> If not empty, then which balls did we fail to remove?

>> None.

>>>

>>> Can we put infinitely many balls into a vase by doing it one at a time  
>>> (with increasing speed)? If so, are we able to also empty a vase with  
>>> infinitely many balls by the same method? (Countably infinite in each  
>>> case, of course.)

>

>> Yes, but not all countable infinities are the same. This is a basic problem  
>> with "cardinality".

>

> But in both examples (the ten-at-a-time example and the all-at-once  
> example), we put the same number of balls in the vase: one ball for  
> each natural number. And in both examples, we removed the balls in  
> exactly the same way. How can the outcome be any different?

You didn't remove the balls the same way. In the original example, every time you removed a ball you added ten. How can that be ignored? If you started with an infinite number, then removed one and added ten, you would NOT have zero at

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noon. Or, would you?

>

> Or do you think that putting in balls ten at a time until we've

> exhausted the set  $N$  of natural numbers produces a \*bigger\* set than

> putting all of the balls in the vase at once? Where did those extra

> natural numbers come from?

No, I think that adding ten and removing one is the same as adding nine, but  
silly me, I am using basic math when speaking of numbers.

>

>

—

Smiles,

Tony

.

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• *Follow-Ups:*

◆ **Re: infinity**

◇ *From:* David R Tribble

◆ **Re: infinity**

◇ *From:* Virgil

◆ **Re: infinity**

◇ *From:* Jesse F. Hughes

• *References:*

◆ **infinity**

◇ *From:* Theo Jacobs

◆ **Re: infinity**

◇ *From:* Dave Seaman

◆ **Re: infinity**

◇ *From:* snapdragon31

◆ **Re: infinity**

◇ *From:* Dave Seaman

◆ **Re: infinity**

◇ *From:* snapdragon31

◆ **Re: infinity**

◇ *From:* Dave Seaman

◆ **Re: infinity**

◇ *From:* snapdragon31

◆ **Re: infinity**

◇ *From:* Dave Seaman

◆ **Re: infinity**

◇ *From:* snapdragon31

◆ **Re: infinity**

◇ *From:* Randy Poe

◆ **Re: infinity**

◇ *From:* aeo6

◆ **Re: infinity**

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- ◇ *From:* Virgil
- ◆ **[Re: infinity](#)**
  - ◇ *From:* aeo6
- ◆ **[Re: infinity](#)**
  - ◇ *From:* Jesse F. Hughes
- ◆ **[Re: infinity](#)**
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  - ◇ *From:* Jesse F. Hughes

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